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**Aerotropism.**—POLOWZOW has taken up the question of the response of plant organs to gases.<sup>21</sup> Reserving the usual term aerotropism for sensitiveness to the mixture of gases that compose the air, he proposes the term *aeroidotropism* for sensitiveness to pure gases. This seems an unnecessary refinement of terms. Very properly he criticizes the use of roots as subjects for experiments with gases, since the organ is under wholly unnatural conditions, and uses stems, which SAMMET tried with negative results. POLOWZOW finds *Brassica Napus*, *B. Rapa*, *Vicia sativa*, *V. Faba*, *Pisum sativum*, *Lupinus albus*, *Phaseolus multiflorus*, and *Helianthus annuus* sensitive to O<sub>2</sub> and CO<sub>2</sub>, but unaffected by H and N<sub>2</sub>. The grasses studied were all indifferent. At the beginning there is a positive curvature, which becomes more rapid, slows, ceases; shortly a negative curvature sets in, gradually increasing. When stimulation ceases, curvature slows, stops, and then the recovery of the normal position takes place. The active region may be a centimeter or more distant from the perceptive region, which may even be in the part of the stem that has ceased growing, showing that perceptive capacity persists longer than capacity for the curvature reaction. The perception time was found to be 0.5 sec. with 0.01% of CO<sub>2</sub> and periods of stimulation and rest in the ratio 1:3. The reaction time was found to be not much more than in various tactual responses; POLOWZOW thinks because the movements in both cases were examined by the microscope, and he pleads for the use of the more refined methods of the animal physiologists. There is certainly nothing to prevent; BOSE has blazed the path. We hope that in the full paper to which this is preliminary the author will give us such records and discuss more fully some general questions he raises.—C. R. B.

**Seed production in Pinus.**—Under this title HAYDON<sup>22</sup> presents the results of an extended field study supplemented by cytological work. The cytological conditions found in both microsporangiate and megasporangiate cones at various seasons are noted in detail. The staminate cone, in the vicinity of Liverpool, passes the winter in the spore mother cell stage. The megaspore mother cell appears about the end of May, but its origin was not determined. Occasionally large ventral canal cells are formed, and in a few cases the first mitosis in the egg was observed when there were no traces of pollen tubes or other evidences of fertilization. HAYDON believes this supports the suggestion of the reviewer<sup>23</sup> that a large ventral canal nucleus might fertilize the egg. The simultaneous divisions at the base of the egg by which the proembryo passes from the 8-celled stage to the 12-celled stage is sometimes in the lower tier instead of in the upper tier, as is usually the case. Theoretically, the ovulate cone might produce some

<sup>21</sup> POLOWZOW, W., Experimentelle Untersuchungen über die Reizerscheinungen der Pflanzen, mit besonderer Berücksichtigung der Einwirkung von Gasen. Vorläufige Mitteilung. Ber. Deutsch. Bot. Gesells. **26a**:50-69. 1908.

<sup>22</sup> HAYDON, WALTER T., The seed production of *Pinus sylvestris*. (Inaugural address.) Proc. and Trans. Liverpool Biol. Soc. **22**:1-32. figs. 16. 1907.

<sup>23</sup> BOT. GAZETTE. **42**:349. 1906.